IV. "The Electromotive Properties of the Electrical Organ of *Torpedo marmorata*." By FRANCIS GOTCH, B.A., B.Sc. London, M.A. Oxon. Communicated by Professor BURDON SANDERSON, F.R.S. Received May 5, 1887.

(Abstract.)

After an introduction, in which the author sets forth the present state of knowledge with reference to the electromotive properties of the electrical organ of Torpedo, he gives an account of his own experimental investigations in three sections.

The first section relates to the nature of the changes produced in the electrical organ by mechanical injury and by heat, and the relation of these changes to those which manifest themselves under similar conditions in muscle and nerve, a subject which has not hitherto been inquired into.

In the second, the duration and the character of the response of the electrical organ to stimulation of its nerve are investigated for the first time by means of the rheotome and galvanometer.

In the experiments which are recorded in the third section, the author has entered on the examination of the after-effects which are produced in the organ by the passage through it of voltaic or induction currents, a subject which has been recently investigated by du Bois-Reymond.

The author is led by his experiments to believe that the physiological effects produced in the organ by injury, by the passage of currents, and by the stimulation of the electrical nerve, are, notwithstanding that they differ so widely from each other in distribution, duration, and intensity, all phenomena of excitation.

V. "On Thermal Radiation in Absolute Measure." By J. T. BOTTOMLEY, M.A. Communicated by Sir W. THOMSON, Knt., F.R.S. Received April 23, 1887.

(Abstract)

The investigation, of which a detailed account is given in the paper, was commenced in 1883, and some preliminary results were communicated to the Royal Society in June, 1884.

The radiating body used up to the present time has been a metallic wire;* and the general method of experimenting consists in keeping

* I propose, however, as soon as may be, to repeat and extend the experiment of D. Macfarlane ('Roy. Soc. Proc.' vol. 20, 1872) on radiation from metallic globes.